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A symplectic proof of a theorem of Franks

[Brian Collier](), [Ely Kerman](), [Benjamin M. Reiniger](), [Bolor Turmunkh](), [Andrew Zimmer]()

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A celebrated theorem in two-dimensional dynamics due to John Franks asserts that every area preserving homeomorphism of the sphere has either two or infinitely many periodic points. In this work we reprove Franks' theorem under the additional assumption that the map is smooth. Our proof uses only tools from symplectic topology and thus differs significantly from all previous proofs. A crucial role is played by the results of Ginzburg and Kerman concerning resonance relations for Hamiltonian diffeomorpisms.

Comments:	15 pages. Minor changes. Final version to appear in Compositio Mathematica
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